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Feedlot growth curves depend on biological type

Ioannis Mavromichalis, MSc, PhD

This issue explains why feedlot cattle should not be managed as one biological category and why feedlot nutrition must begin with cattle type, maturity pattern, previous feeding history, and carcass endpoint before the ration is formulated.

Feedlot nutrition often starts with ration formulation. We think in terms of roughage, cereals, protein feeds, additives, step-up diets, TMR mixing, and bunk calls before asking the first question: what kind of cattle are these?

For example, a 250-kg Holstein bullock, a 350-kg Angus-cross steer, and a 420-kg Charolais-cross heifer may all enter an intensive feeding system, but they are not the same animal. They differ in frame, maturity, gut size, maintenance cost, muscle potential, fat deposition pattern, heat tolerance, previous diet, and profitable endpoint. They are all cattle, but not the same cattle.

Sort before formulating

Before the diet is discussed, cattle should be described by source, breed type, age, weight, previous nutrition, health risk, expected dressing percentage, and target market. A pen averaging 450 kg can hide animals that are 60 days from finish and others that still need frame and muscle. Averages tell only half-truths. The spread matters as much, and often more. Sorting only by weight is useful, but not enough. Where possible, sorting should also consider biological type, source history, and likely days to finish.

Maturity decides the energy curve

Early-maturing cattle need a different energy curve from later-maturing cattle. Angus-type cattle may reach finish sooner; continental crosses may tolerate more days on feed before excess fat becomes the main problem. Angus × Holstein cattle sharpen this point. Holstein contributes frame, maintenance demand, dairy-type growth, and marbling ability. Angus adds earlier maturity and even more marbling pressure. Fed too long on a conventional high-grain program, this animal can move quickly from desirable finish to excess carcass fat.

Frame is not growth potential

Tall cattle are not always late-maturing cattle. Dairy-influenced animals may have height and length, but lower dressing percentage and less muscle shape. A Holstein or Angus × Holstein steer may dress around 58–61%, whereas well-muscled beef cattle may be closer to 62–64%. Nutrition can improve efficiency, rumen stability, and carcass endpoint, but it cannot fully erase genetic structure. Lower dressing percentage may be difficult to avoid; excessive carcass fat is more often a management failure.

Previous feeding determines potential

Cattle coming from grass, a grower ration, limit-feeding, or calf-rearing units do not adapt the same way. Receiving diets should reflect history, not standard feedlot practice. High-risk or forage-raised calves may need a slower 21–35 day step-up, more roughage, and less starch pressure. Cattle already adapted to concentrates can move faster, but only if intake remains stable. Angus × Holstein calves that enter intensive feeding very early should still be grown as growers first, not treated as early finishers. Weight alone is not enough to determine how cattle should start in the feedlot.

Roughage versus starch

A common finishing ration may be easy to manage, at least in theory, but not always cheap in outcome. Early-maturing cattle may need tighter control of starch load and days on feed, not simply more energy. Finishing roughage might sit near 6–10% of diet DM in many grain-based systems, but the right level depends on cattle type, grain processing, bunk behavior, acidosis risk, and feed access. For some lots, a more conservative approach, for example 15–20% roughage DM, may be more profitable if it reduces intake disruption, health risk, and carcass inconsistency. For Angus × Holstein, the question is when starch stops adding valuable carcass and starts adding fat.

Carcass feedback closes the loop

Kill data should return to the nutritionist. Hot carcass weight, dressing percentage, fat cover, yield grade, liver abscesses, dark cutters, marbling score, and grade distribution tell us whether the feeding curve matched the cattle. Without that feedback, we are only feeding pens. With it, we can adjust sorting, step-up speed, roughage floor, starch load, days on feed, and marketing endpoint by biological type. A nutritionist can only improve what is measured.

In brief, feedlot cattle are not interchangeable. The recent influx of beef-on-dairy cattle has made this even more apparent. A ration that works well for one type may overfeed, underprepare, or mismanage another. The nutritionist's job is to identify the animal first, then design the growth curve, step-up program, starch exposure, roughage level, and marketing endpoint around the cattle the system actually delivers. This often explains why a standardized feedlot feeding program may work well with one lot and fail in the next.

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